



MOST
CENTRO NAZIONALE PER LA MOBILITÀ SOSTENIBILE



G7 Transport Academic Workshop

**E-Mobility is coming:
will the electrical
system be ready?**

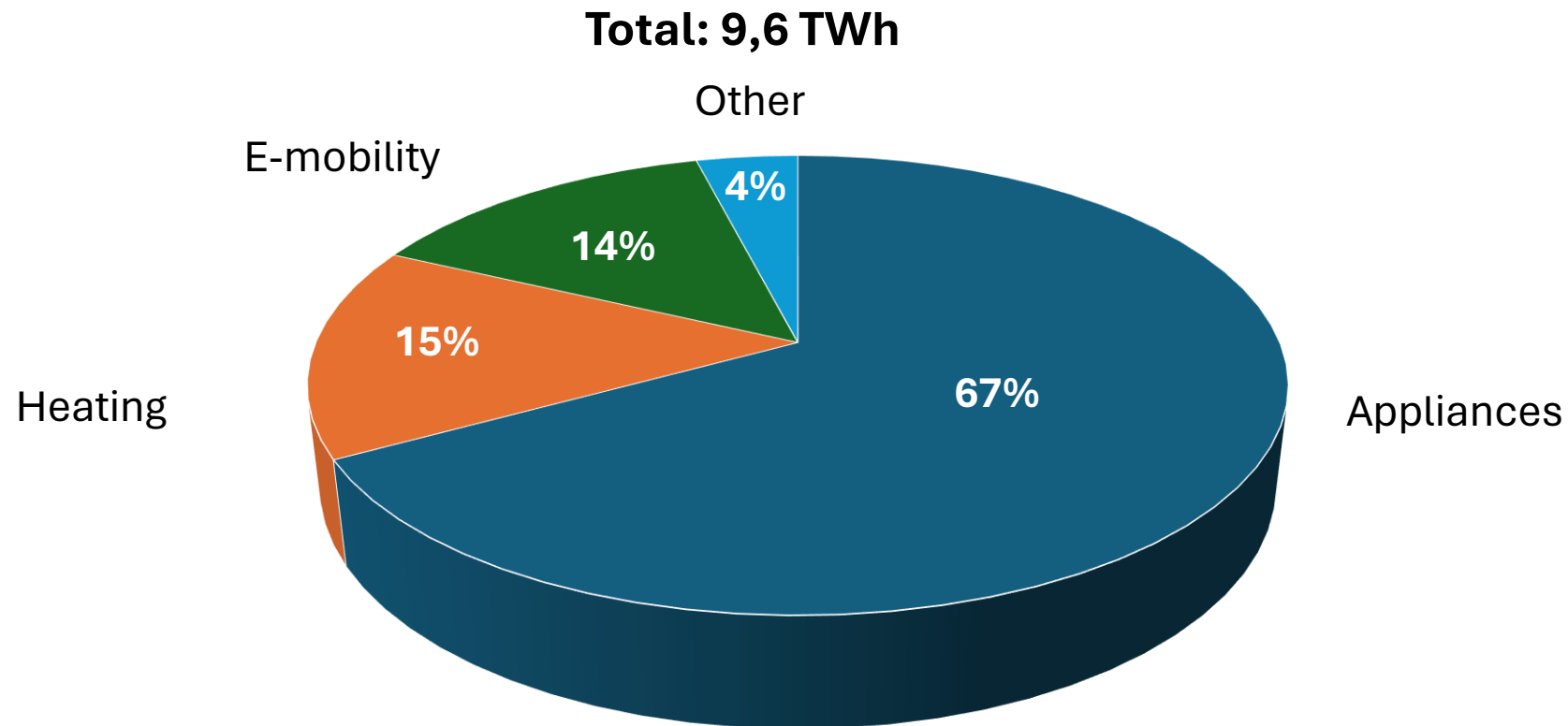
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Wednesday, 10th April 2024 - Aula Magna "Carassa e Dadda"
Politecnico di Milano, Bovisa Campus, Milan (Italy)

E-mobility will probably represent a minor portion of electricity demand in 2050...

EXAMPLE: CITY OF MILAN

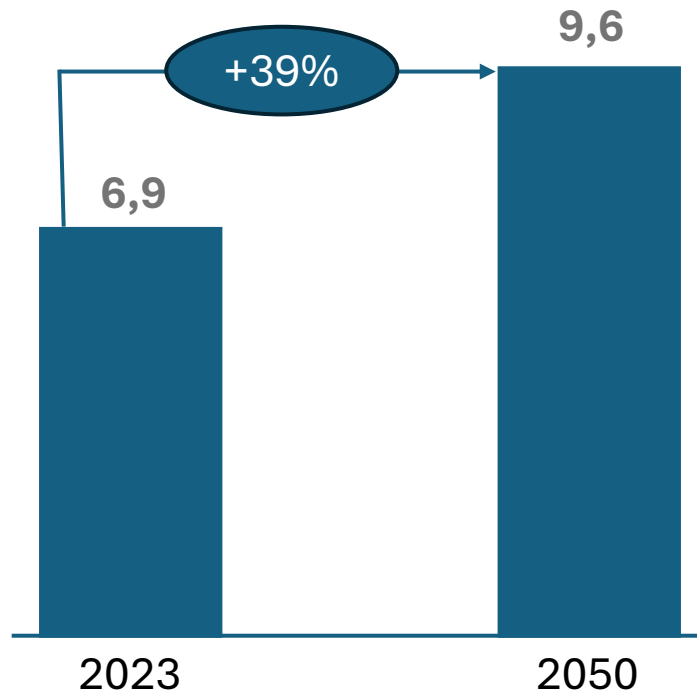


Source: A2A projection

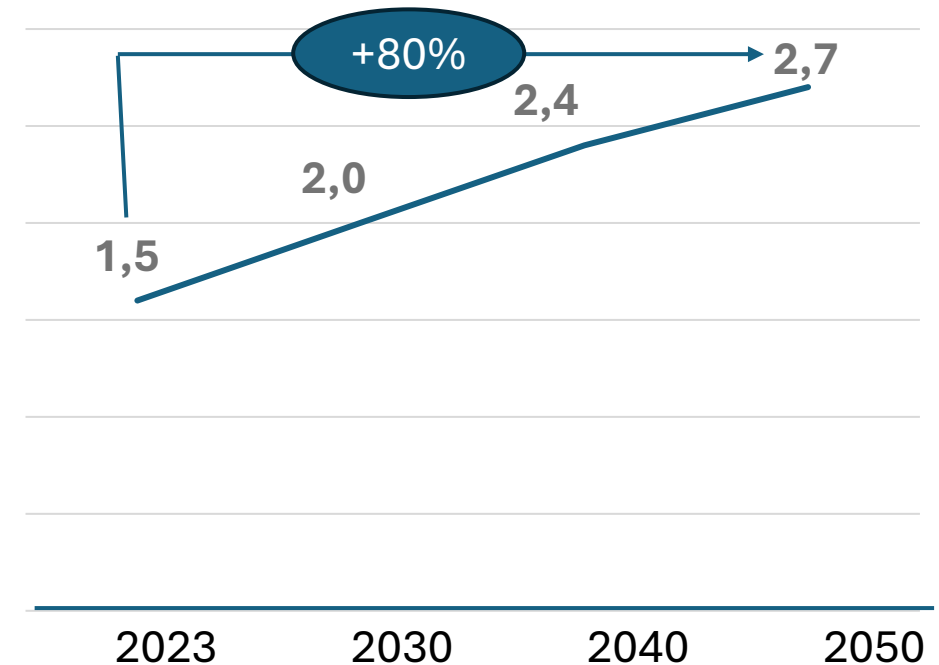
...but will be an additional component in a growing scenario...

EXAMPLE: CITY OF MILAN

Total demand: TWh




Peak demand: GW



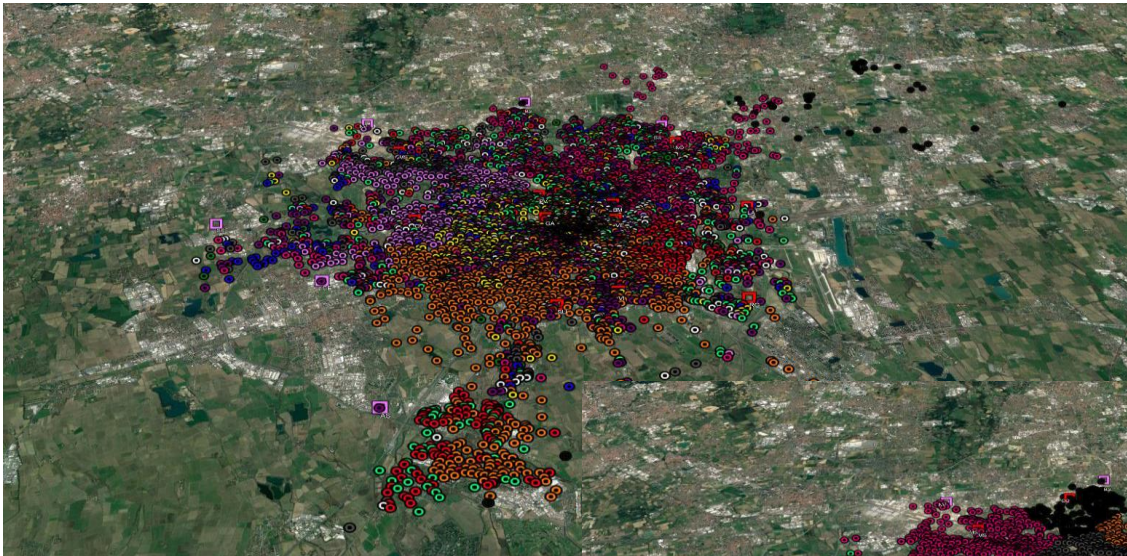
Source: A2A projection

Responding to this challenge drives network investments

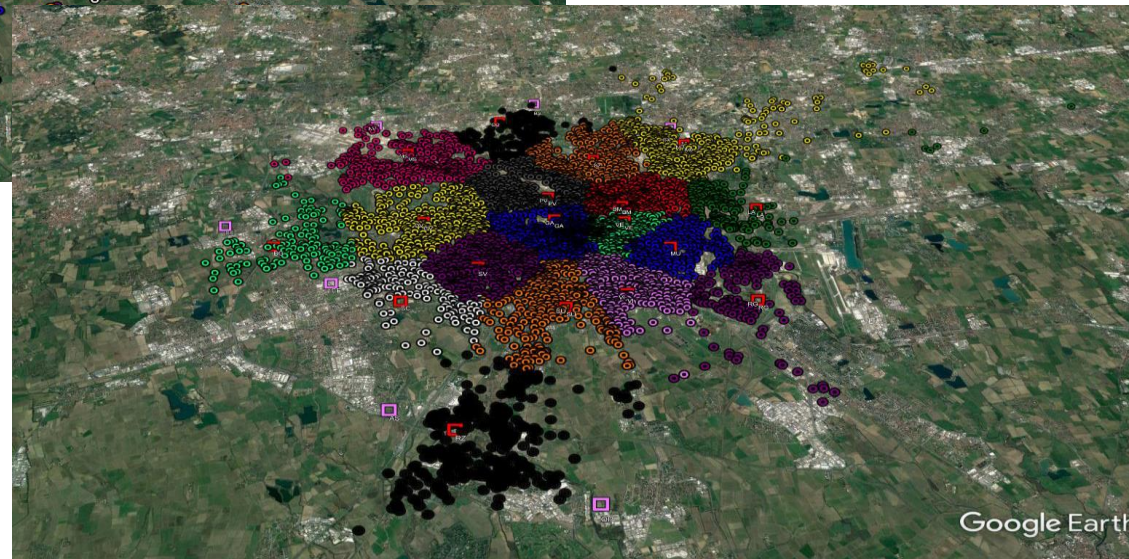
- Make the network stronger
- Make the network more intelligent
- Create capability of load management

- 
- A blue arrow pointing from the left list of bullet points towards the right list of bullet points.
- Unareti increased capex from 50m€/y in 2015 to 250 m€/y in 2024
 - At EU level, 580 b€ capex are estimated by 2030

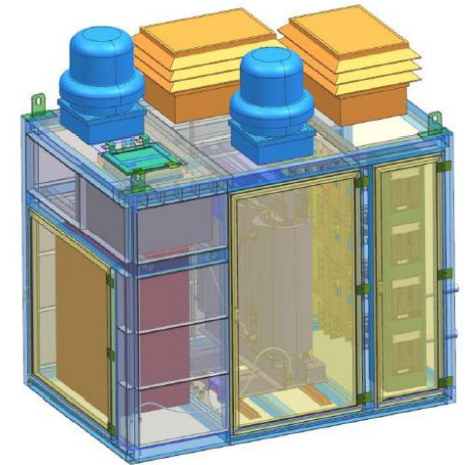
Make the network stronger



From 11 to 20 PS
From 4k km to 2,5k MV
lines



Compact, underground,
waterproof secondary
substation



Make the network more intelligent

EXAMPLES



Completing replacement of all meters with 2G models



Completed installation of most sophisticated IDMS system ...and preparing for DRMS

Creating capability of load management



Types of VGI Smart Charging

V1G = Unidirectional controlled charging
Vehicles or charging infrastructure adjust their rate of charging



V2H/B = Vehicle-to-home/-building
Vehicles will act as supplement power suppliers to the home

V2G = Vehicle-to-grid
Smart grid controls vehicle charging and returns electricity to the grid

Finally, considering crises...

- In case of "normal" problems, e-mobility should be considered highly resilient thanks to its capillarity and the opportunity to provide multiple charging opportunities
- In case of "existential problems", its more centralized structure could represent a weakness

**Thanks for your
attention**